Petroleum Coke Test Burn Plan

Purpose:

The purpose of this test is to determine the preliminary feasibility of burning a low percentage of petroleum coke as a boiler fuel. The short duration of this test will only allow for a preliminary feasibility test of the blending, handling and combustion. A longer duration test will be required at a later date to check for other characteristics.

General Description:

One unit train (approx. 9100 tons) of pet coke will be used during the test. The pet coke will be burned in only one unit (Unit 1) at approximately 20% blend. Blending of the pet coke with the coal will be done in the active reclaim area using the rotary plow feeders. The coal-pet coke blend will be burned on all burner rows. On the first day of the test, only an amount equivalent to four hours of combustion will be sent up to the unit. This will allow the units time to recover in the event major problems with combustion occur. On the second day, an amount equal to eight hours of combustion will be sent up to the unit and on the third day it will be sent up for full time combustion until the shipment is consumed.

Test Termination:

The test will be terminated if any of the following occurs:

* Failure to maintain permitted stack air quality requirements
* Pulverizer or burner line fires
* Excessive boiler slagging or fouling
* Excessive burner flame instability
* Coal feeder chute or silo plugging
* Excessive mill capacity problems
* All pet coke is burned
* Any other problems that might affect generation

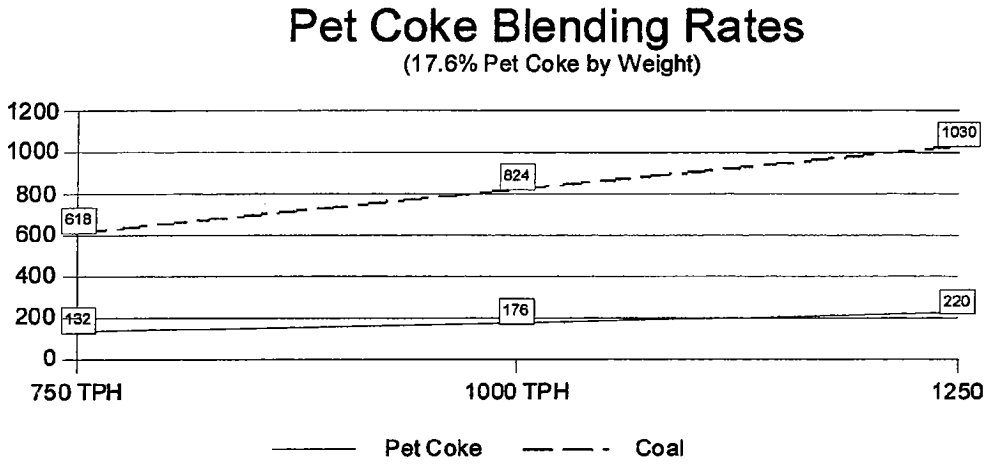
If the test is terminated for any of these reasons, the feeding of pet coke to the unit will stop and a new test plan will be developed. The pet coke remaining in the unit silos at the time the test is terminated should be burned in the boiler in the best way possible.

Pet Coke Delivery and Storage:

The pet coke will be received by bottom dump unit train and should be unloaded in the same manner as coal. The train should be sampled with the as-received sampling system. No pet coke should be sent directly to the units at the time of unloading. The pet coke should be stacked on the south end of the reclaim tunnel over Zone 4 (RPF 7D). This zone should be cleared of coal to its natural angle of repose prior to receiving the shipment of pet coke. The Modicon program for active reclaim will be temporarily modified to prevent reclaiming pet coke from Zone 4 until the test burn.

Reclaim and Blending:

Since this test will only be done only on Unit 1, care should be taken to insure that pet



coke does not go to Unit 2. RPF 7D should be used to reclaim the pet coke and either RPF 7A or 7B to reclaim the coal. The above graph can be used to determine the proper feed rate for each. The blending should start by establishing coal flow to the appropriate tonnage and then adding pet coke until the desired total tonnage is achieved. This will insure that the percentage of pet coke is not exceeded. RPF 7D will be temporarily modified to allow flow rates down to approximately 150 TPH.

For day one of the test, the Operator should run approximately 1200 tons of blended coal-pet coke to Unit 1. This will take about one hour and 12 minutes at 1000 TPH. The silo fill operation should be operated in timed mode to levelize the amount of pet coke to each silo. No effort should be made to equalize silo levels before the test, the main purpose of day one is to witness the effect of the blend on the pulverizers and burners. This can be done on an individual silo basis. After the blended coal is sent to the silos, the operator can fill the remaining portion of the silos with coal as normal.

For day two, the Operator should send approximately 2400 tons of blended coal to Unit 1. This will take about 2 hours and 24 minutes at 1000 TPH. Everything else should be the same as day one.

For day three and thereafter, the Operator should send the blended mix to Unit 1 as they would under normal operation. The pet coke should last approximately six days (total test time of eight days) before it is totally burned.

Unit Operation:

Unit 1 should be operated base loaded and at maximum capacity as much as possible but, may be left in AGC control. Testing at lower loads will be done at a later date if this test is successful. Based on conversations with other utilities, major changes to boiler operations are not expected. Excess air requirements, burner adjustments and sootblowing should remain about the same. Sometime during the test, it would be

beneficial to stop and start a pulverizer that is currently burning pet coke blend to determine how well the mixture ignites. The following results may be seen as a result of burning pet coke:

* Flyash LOI's will probably increase
* CO emissions may increase slightly
* SO2 emissions will almost double, pet coke is very high in sulfur (4%)
* Boiler slagging and fouling should remain about the same
* Ash production will decrease by 20%

AQCS Operation:

Our existing requirement for S02 emissions is 0.15 lbs/MBTU. Last year the average SO2 emissions was 0.07 Lbs/MBTU. The addition of the pet coke will double the amount of SO2 entering the scrubber. Based on our current performance we should still be able to remain below our regulatory requirement. Even if we exceed the limit slightly for significant periods of the test, we will still remain in compliance because it is calculated on a 30 day rolling average basis. Because of the higher SO2 concentration entering the scrubber, the following changes to scrubber operation should be expected:

* Limestone consumption will increase
* Recovered water addition to the modules will increase to control density
* Scrubber sump pump flow will increase
* More sludge will be processed in sludge conditioning

Test Measurements and Samples:

A detailed list of samples and measurements that should be recorded during the test will be developed later.